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CLAIMS 1 – 20 (CANCELLED)

Claim 21. (New) A printed circuit board comprising:

a printed wiring board;

a plurality of components mounted on the printed wiring board; and

an electrically continuous conformal EMI protective shield for adhering directly to and conforming with surfaces of at least a region of a printed circuit board comprising:

a dielectric coating adhering directly to surfaces of the printed circuit board to provide an electrically nonconductive, contiguous layer over all such printed circuit board surfaces; and

a conductive coating, adhered directly to surfaces of the dielectric coating, formed by the application of a conductive polymeric dispersion comprising beads suspended in a base liquid, wherein the beads comprise an intrinsically conducting polymer.

Claim 22. (New) The printed circuit board of claim 21, wherein the intrinsically conductive polymer comprises one or more of the group consisting of polypyrrole, polyanaline, polyacetylene, polythiophenes, poly(p-phenylele vinlene)s, poly-thylenedioxythiophene and polyphenylenesulfide.

Claim 23. (New) The printed circuit board of claim 21, wherein the base liquid is one or either water or an organic solvent.

Claim 24. (New) The printed circuit board of claim 21, wherein the conductive polymeric dispersion is a core-shell dispersion comprising substrate beads coated with the intrinsically conductive polymer.

Claim 25. (New) The printed circuit board of claim 21, wherein the substrate beads comprise at least one of the group consisting of acrylic beads and polyurethane beads.

Claim 26. (New) The printed circuit board of claim 21, wherein the conductive polymeric dispersion further comprises:

binder particles suspended in the dispersion.

Claim 27. (New) The printed circuit board of claim 26, wherein the binder particles are formed of one of an acrylic or urethane.

Claim 28. (New) The printed circuit board of claim 21, wherein the conductive polymeric dispersion further comprises:

one or more additives that facilitate a desired curing process.

Claim 29. (New) The printed circuit board of claim 28, wherein the desired curing process is one or more of either UV curing and temperature curing.

Claim 30. (New) The printed circuit board of claim 29, wherein said dispersion further comprises one or more of the group consisting of:

at least one photosensitizing agent to enable said dispersion to be UV cured; and

at least one heat-curing agent to enable said dispersion to be temperature cured.

Claim 31. (New) The printed circuit board of claim 30, wherein said photosensitizing agent is a UV-curable acrylic.

Claim 32. (New) The printed circuit board of claim 30, wherein said heat-curing agent is anhydride.

Claim 33. (New) The printed circuit board of claim 21, wherein the conductive coating has a conductivity between 10^{-8} to 10^{6} S/cm.

Claim 34. (New) The printed circuit board of claim 21, wherein the conductive coating has a conductivity of between 0 to 10^{6} S/cm.

Claim 35. (New) The printed circuit board of claim 21, wherein the conductive coating has a redox potential of greater than zero.

Claim 36. (New) The printed circuit board of claim 35, wherein the redox potential is approximately +0.8 volts.

Claim 37. (New) The printed circuit board of claim 21, wherein the conductive polymeric dispersion has properties that enables it to be applied to the dielectric coating using atomization spray techniques.

Claim 38. (New) The printed circuit board of claim 21, wherein the conductive polymeric dispersion has a viscosity and adhesion that prevent said conductive polymeric dispersion from dewetting once applied to surfaces of the dielectric coating.

Claim 39. (New) The printed circuit board of claim 21, wherein the dielectric coating and the conductive coating have at least similar composite resin structures that facilitate bonding between the dielectric and conductive coatings.

Claim 40. (New) The printed circuit board of claim 21, wherein the dielectric coating and the conductive coating have approximately the same coefficient of thermal expansion.

Claim 41. (New) The printed circuit board of claim 21, wherein the suspension of the beads in the conductive polymeric dispersion is substantially uniform.

Claim 42. (New) The printed circuit board of claim 21, wherein the intrinsically conducting polymer is substantially contiguous in the conductive coating.

Claim 43. (New) The printed circuit board of claim 23, wherein the organic solvent comprises one or more of the group consisting of:

N-Methyl-Pyrlidinone (NMP);
alcohol;
acetone; and
Methyl-Ethyl-Ketone (MEK).

Claim 44. (New) The printed circuit board of claim 21, wherein the intrinsically conducting

polymer is substantially transparent.

Claim 45. (New) The printed circuit board of claim 21, wherein the conductive coating has a redox potential sufficient to prevent corrosion of said conductive coating.

Claim 46. (New) A printed circuit board comprising:

a printed wiring board;

a plurality of components mounted on the printed wiring board; and

an electrically continuous conformal EMI protective shield for adhering to surfaces of a printed circuit board comprising:

a dielectric coating adhering to surfaces of the printed circuit board; and

a conductive coating, adhered to surfaces of the dielectric coating, formed by the application of a conductive polymeric dispersion of intrinsically conducting polymer beads.

Claim 47. (New) The printed circuit board of claim 46, wherein the intrinsically conductive polymer comprises one or more of the group consisting of polypyrrole, polyanaline, polyacetylene, polythiophenes, poly(p-phenylele vinlene)s, poly-thylenedioxythiophene and polyphenylenesulfide.

Claim 48. (New) The printed circuit board of claim 46, wherein the base liquid is one or either water or an organic solvent.

Claim 49. (New) The printed circuit board of claim 46, wherein the conductive polymeric dispersion is a core-shell dispersion comprising substrate beads coated with the intrinsically conductive polymer.

Claim 50. (New) The printed circuit board of claim 46, wherein the substrate beads comprise at least one of the group consisting of acrylic beads and polyurethane beads.

Claim 51. (New) The printed circuit board of claim 46, wherein the conductive polymeric dispersion further comprises:

binder particles suspended in the dispersion.

Claim 52. (New) The printed circuit board of claim 51, wherein the binder particles are formed of one of an acrylic or urethane.

Claim 53. (New) The printed circuit board of claim 46, wherein the conductive polymeric dispersion further comprises:

one or more additives that facilitate a desired curing process.

Claim 54. (New) The printed circuit board of claim 53, wherein the desired curing process is one or more of either UV curing and temperature curing.

Claim 55. (New) The printed circuit board of claim 54, wherein said dispersion further comprises one or more of the group consisting of:

at least one photosensitizing agent to enable said dispersion to be UV cured; and

at least one heat-curing agent to enable said dispersion to be temperature cured.

Claim 56. (New) The printed circuit board of claim 55, wherein said photosensitizing agent is a UV-curable acrylic.

Claim 57. (New) The printed circuit board of claim 55, wherein said heat-curing agent is anhydride.

Claim 58. (New) The printed circuit board of claim 46, wherein the conductive coating has a conductivity between 10^{-8} to 10^{6} S/cm.

Claim 59. (New) The printed circuit board of claim 46, wherein the conductive coating has a conductivity of between 0 to 10^{6} S/cm.

Claim 60. (New) The printed circuit board of claim 46, wherein the conductive coating has a redox potential of greater than zero.

Claim 61. (New) The printed circuit board of claim 60, wherein the redox potential is approximately +0.8 volts.

Claim 62. (New) The printed circuit board of claim 46, wherein the conductive polymeric dispersion has properties that enables it to be applied to the dielectric coating using atomization spray techniques.

Claim 63. (New) The printed circuit board of claim 46, wherein the conductive polymeric dispersion has a viscosity and adhesion that prevent said conductive polymeric dispersion from dewetting once applied to surfaces of the dielectric coating.

Claim 64. (New) The printed circuit board of claim 46, wherein the dielectric coating and the conductive coating have at least similar composite resin structures that facilitate bonding between the dielectric and conductive coatings.

Claim 65. (New) The printed circuit board of claim 46, wherein the dielectric coating and the conductive coating have approximately the same coefficient of thermal expansion.

Claim 66. (New) The printed circuit board of claim 46, wherein the suspension of the beads in the conductive polymeric dispersion is substantially uniform.

Claim 67. (New) The printed circuit board of claim 46, wherein the intrinsically conducting polymer is substantially contiguous in the conductive coating.

Claim 68. (New) The printed circuit board of claim 48, wherein the organic solvent comprises one or more of the group consisting of:

N-Methyl-Pyrlidinone (NMP);

alcohol;

acetone; and

Methyl-Ethyl-Ketone (MEK).

Claim 69. (New) The printed circuit board of claim 46, wherein the intrinsically conducting polymer is substantially transparent.

Claim 70. (New) The printed circuit board of claim 46, wherein the conductive coating has a

redox potential sufficient to prevent corrosion of said conductive coating.

Claim 71. (New) A printed circuit board comprising:

a printed wiring board;

a plurality of components mounted on the printed wiring board; and

an electrically continuous conformal EMI protective shield for adhering directly to and conforming with surfaces of at least a region of a printed circuit board comprising:

a dielectric coating adhering directly to surfaces of the printed circuit board to provide an electrically nonconductive, contiguous layer over all such printed circuit board surfaces; and

a conductive coating, adhered to surfaces of the dielectric coating, formed by the application of a conductive polymeric core-shell dispersion comprising substrate beads coated with an intrinsically conductive polymer and binder suspended in base liquid of water.

Claim 72. (New) The printed circuit board of claim 71, wherein the intrinsically conductive polymer comprises one or more of the group consisting of polypyrrole, polyanaline, polyacetylene, polythiophenes, poly(p-phenylele vinlene)s, poly-thylenedioxythiophene and polyphenylenesulfide.

Claim 73. (New) The printed circuit board of claim 71 wherein the substrate beads comprise at least one of the group consisting of acrylic beads and polyurethane beads.

Claim 74. (New) The printed circuit board of claim 71, wherein the binder comprises one of an acrylic or urethane particles.

Claim 75. (New) The printed circuit board of claim 71, wherein the conductive polymeric dispersion further comprises:

one or more additives that facilitate a desired curing process.

Claim 76. (New) The printed circuit board of claim 71, wherein the conductive coating has a redox potential of greater than zero and a conductivity of between 0 to 10^6 S/cm.

Claim 77. (New) The printed circuit board of claim 71, wherein the conductive polymeric dispersion has properties that enables it to be applied to the dielectric coating using atomization spray techniques.

Claim 78. (New) The printed circuit board of claim 71, wherein the suspension of the beads in the conductive polymeric dispersion is substantially uniform.